A PERSPECTIVE ON THE FUTURE OF INFECTIOUS DISEASE REIMBURSEMENT*

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ONE of the more durable realities of American medical care is that while everyone deplores its ever rising cost, efforts to control these expenditures collide with some of our society's most cherished beliefs—free enterprise, limited government, individualism, and unrestricted choice of health-care provider. As a consequence, economic and medical interests with heavy stakes in this sector engage in continuing warfare over the cost of care.

This struggle, while the norm in virtually all industrialized nations, is particularly messy in the United States because we have never clearly defined the appropriate roles for government and the private sector. A glaring example of society's failure to cast these roles is the issue over who is responsible for financing the care of people who cannot afford it. The question becomes even more pronounced now that we have entered an era when the dread disease AIDS is making its way unpredictably through American society.

In this short paper I want to transmit five messages. I shall dwell on physician manpower issues because that was my assignment, but there are several other messages that I think people who work in the biomedical research world should understand about the current state of health-care finance. The first is that medical care costs are again on the rise after several years of more moderate growth. The second message is that federal health financing policy has obviously become popular budget-cutting target for the foreseeable future. Third, the Reagan Administration's benign neglect of health policy has obviously become a popular budget-cutting target for the foreseethey must seek their own cost-containment solutions. In the long run, this may well prove fortunate because as a society we favor pluralistic answers to difficult problems. My fourth message is that the bountiful supply of physi-

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cians reflects America's strong belief in the medical model. Because of our strong commitment to this model, any efforts by the American Medical Association or any other body to trim the production of new physicians will likely face opposition from the public. For example, when an increasing chorus of professional and political voices was warning of an impending physician surplus, a survey sponsored by the AMA in 1984 found that only 12% of the public believed that there were too many physicians.

My final message is that no matter what private and public policies are adopted in the future to constrain physician supply, however stringent, the United States is on a trajectory of continued, sizeable increases in the number of practicing physicians well into the next century.

Figure 1 shows that in 1986 per capita expenditures for health care were $1,837. Total expenditures for personal health services in 1986 were $458 billion, or 10.9 percent of our gross national product, the highest percentage among all industrialized nations. By many measures, health care has become a vast enterprise in the United States. The sector employs some 7 million people and consumes more resources than all but five nations produce. In 1986 the health sphere grew 8.6%, compared with an economywide rate of 1.9%. Interestingly, program administration and other professional services were the most rapidly growing components of health-care spending, as Figure 2 shows. Many of these expenses were generated by the changing configuration of the health-care delivery system.

While much of the dialogue about this vast sector centers around the federal government and its actions, only about 41% of all health spending derives from public sources. So, unlike most other western countries, health care in the United States remains, on balance, a private activity. For example, Australia, Canada, France, Japan, and Spain all spend more than 70% of their health-care dollar through the public sector. In Greece, Norway, Sweden, and the United Kingdom government expenditures make up more than 90% of total health expenditures.

Unlike most of these countries, the United States has not answered the question, is health care a private consumption good or is it a community service? By that I mean is health care a service that society should make available to all of its citizens, like fire and police protection, or should it be regarded as a good that people should purchase for themselves? We seem torn by this question if one considers the following contradiction. While most public opinion surveys report that people believe that health care should be available to everyone regardless of ability to pay, some 35 million people do not have health insurance of any kind, a reality that is tearing our social fabric.

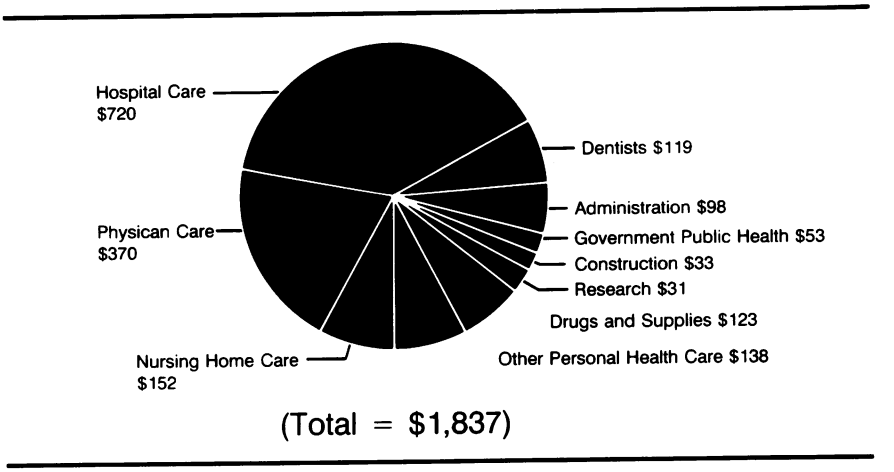

Fig. 1. Per capita spending by service type, 1986. 1986 Source: Office of the Actuary, Health Care Financing Administration, June 1987

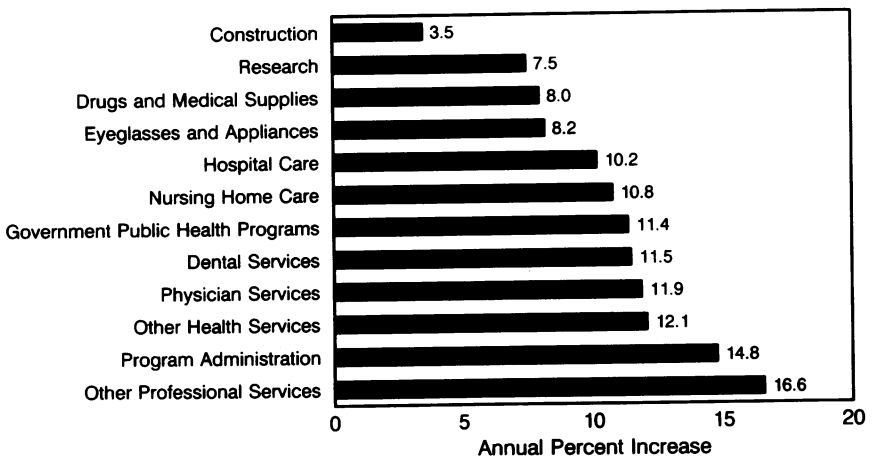

Fig. 2. Annual increases in health care expenditures by type of service 1980-1986. Source: Office of the Actuary, Health Care Financing Administration, June 1987

Despite the turbulence currently disturbing the health-care system as government and private third parties strive to constrain medical expenditures, in the aggregate physicians are doing quite well financially. But I envision increased friction within the medical profession before long between what I call the have and the have-not physicians. To illustrate that point, consider the results of a survey released in November 1987 by the AMA in which physicians self-reported 1986 income that averaged $119,500 before taxes

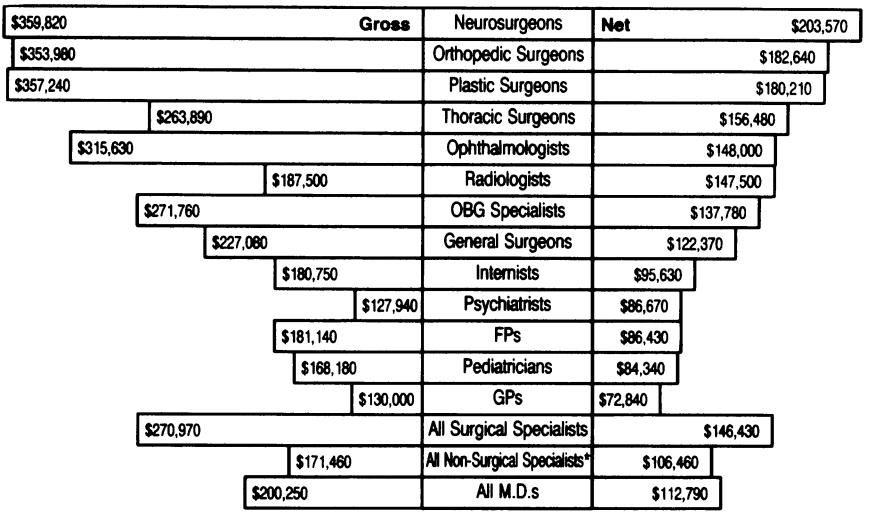

Fig. 3. Income differential between different types of physicians. Excludes FPs and GPs. Gross represents physicians' individual shares of 1986 receipts from practice before professional expenses and income taxes. Figures are medians. Source: *Medical Economics*, September 7, 1987.

and after deductions for business expenses. However, the income of radiologists averaged $168,000 and that of general surgeons $162,400, while family physicians averaged $80,300 and pediatricians $81,800. Figure 3, derived from the annual income survey published by *Medical Economics*, September 7, 1987, depicts the substantial differential between different types of physicians.

One of the interesting developments during this period when the health care system is reconfiguring itself away from strict fee-for-service payment and toward capitation and other financial arrangements is that the ratio of expenditures, hospitals versus physicians, is changing. By that I mean traditionally, for every $3.00 of health spending, hospitals got roughly $2.00 and physicians got about $1.00. In a capitated arrangement such as that employed by the Kaiser Permanente Medical Care Program, to use one example, physician services consume about 55% of total expenditures, while hospital expenditures amount to about 45%.

Of all of the institutions and individuals that face problems, I believe that the nation's hospitals have perhaps most to worry about. There is an excess of hospital beds in almost every section of the nation. The number of inpatient days is decreasing. Patient admissions are falling as are hospital occupancy rates. Medicare continues to squeeze hospitals because the annual update

TABLE I. FEDERAL EMPLOYEES HEALTH BENEFITS PROGRAM SAMPLING

	1987 total premium	*1988 monthly premium rates*				
		Total premium	*Govt. pays*	*Empl. pays*	*Change in emp. payment*	*Percent premium rise*
Traditional						
Blue Cross & Blue Shield						
High self	132.17	187.66	77.50	110.16	36.51	42%
High family	289.14	396.13	167.88	228.25	68.44	37%
Aetna						
High self	139.30	210.34	77.50	132.84	52.06	51%
High family	259.59	391.95	167.88	224.07	93.81	51%
HMOs						
Kaiser Fdtn Health Plan, South Cal.						
High self	88.25	95.53	71.65	23.88	−5.85	7%
High family	221.15	238.46	167.88	70.58	−21.24	8%
Harvard Comm. Health Plan						
High self	94.40	100.12	75.09	25.03	−10.85	6%
High family	255.95	271.46	167.88	103.58	−23.04	6%

factor allowed under the program's new prospective payment system falls well short of increasing hospital expenses. As a consequence, many hospital managers fear that 1988 is the year that average profit margins under Medicare will fall below zero.

The health care organizations gaining market share, generally speaking, are large multispecialty group practices and well run health maintenance organizations based on individual practice association models. One characteristic these organizations have in common is that they are, for the most part, managed by physicians. That fact does call into question the notion—some might even call it conventional wisdom—that physicians do not make good managers.

One point I want to underscore is that health care costs are again on the rise. I shall illustrate that point by bringing to your attention the premium increases federal employees face in this coming year, as depicted in Table I. Federal employees learned of these rate increases late in 1987 when they had the opportunity to change health plans. The Office of Personnel Management, which oversees this process, calls this month-long period "open season." Depending on the benefit package offered, premium rates for individuals insured by Aetna Life & Casualty increased 42%, 31%, and 51%.

HMO premium increases were substantially smaller—7 and 8% for the two benefit packages offered by the Kaiser Permanente Medical Care Program and 6% for the Harvard Community Health Plan.

What are the reasons for these staggering premium increases? To some extent the question is open, but clearly physicians and hospitals provided more services per patient than health insurers aniticpated, and insurers may also have miscalculated their rates. Nevertheless, premium increases of this magnitude will certainly not be limited only to the Federal Employees Health Benefits Program. Substantial increases—perhaps not as large as those registered by the federal program—will likely be the norm among Blue Cross plans, commercial insurers, and self-insured schemes during 1988. Such increases in health-care costs will only add to public pressure for reforms that could possibly curtail this continuing spiral.

Despite this public concern over rising costs, though, no service is more highly valued in the United States than medical care. A solid reflection of that commitment is society's belief that there should be a bountiful supply of doctors. As Table II shows, if current rates of physician production continue into the indefinite future, the United States will have substantially more than the 521,000 who practice today. These figures indicate increases in the number of trained physicians of 27.9% by the year 2000 and 45% by the year 2020. The U.S. Census estimates that the general population will increase by 12.3% by the year 2000, compared with an almost 28% increase in the number of physicians.

Table III includes a lot of information, but it depicts agreement by the federal government and the AMA as to the projected growth in the supply of physicians. Federal estimates were derived from work by the Bureau of Health Professions at the Department of Health and Human Services. The AMA estimates were produced by its Center for Health Policy Research.

The AMA has gone through a rather basic policy shift in its attitude about physician supply. For many years, as a consequence of the strongly held views of its executive vice president, James H. Sammons, the association held that the market, rather than government regulation, would take care of any necessary adjustments in the number of practicing physicians. In the last several years, however, as physicians in some states, particularly California, began to feel the competitive pressures of a greater number of practicing doctors, the AMA's reliance on the market to calibrate supply and demand has come under sharp scrutiny by its constituency.

In 1986 the AMA rather quietly changed its position by moving away from strict dependence on market forces. That year, at the association's annual

TABLE II. NUMBER AND PERCENT DISTRIBUTION OF ACTIVE MDs IN PRIMARY CARE AND NUMBER PER 100,000 POPULATION, 1986, 2000, 2010, AND 2020

	Number of MDs				*Percent change number of physicians*	
Category	*1986*	*2000*	*2010*	*2020*	*1986-2000*	*1986-2020*
All active MDs	521,777	667,367	735,016	757,133	27.9	45.1
Primary care total	190,192	228,696	243,147	254,256	20.2	33.7
General family practice	71,319	81,658	88,100	95,104	14.5	33.4
General internal med	83,192	100,579	104,324	107,662	20.9	29.4
General pediatrics	35,681	46,459	50,723	51,490	30.2	44.3
All other	331,585	438,671	491,869	502,877	32.3	51.7

meeting, its House of Delegates approved the final report of the AMA Task Force on Physician Manpower. The report recommended that the AMA undertake "extensive, ongoing analyses of physician manpower issues," including an annual technical report and efforts better to inform medical students, state legislators, and the public about the changing needs for health professionals.

The AMA has approached the issue of physician supply gingerly for a variety of reasons. These include the enduring hostility the association engendered by its efforts during the Great Depression of the 1930s to limit the supply of physicians, its ideological opposition to government intrusion into matters traditionally considered professional prerogatives, its uncertainty about whether the projected numbers of practitioners would really exceed market demand, and its fear that collaborative action by organized medicine might leave it open to antitrust suits. On this last front, the Federal Trade Commission has been keeping a watchful eye on AMA activities regarding physician supply.

Most of this physician supply data was generated by the Council on Graduate Medical Education, an entity created by the Department of Health and Human Services at the direction of the Congress (Omnibus Budget Reconciliation Act of 1986). The council, which has a 10-year life, must produce its first report by July 1, 1988. One might view this exercise as a revisitation to issues examined almost a decade ago by the Graduate Medical Education National Advisory Committee (GMENAC). But The Council has had only very modest resources to carry out its congressional mandate.

The Council, which has been operating for about 18 months, has no permanent staff. It depends on staff borrowed from the Health Resources and Services Administration's Bureau of Health Professions. It also has strictly limited monies to work with, not nearly enough to carry out any original research. Compared with the $5 million expended by GMENAC, The Council has spent only several hundred thousands of dollars thus far. This modest budget reflects the very low priority the Reagan Administration attaches to monitoring, much less influencing, the size of the nation's pool of physicians.

Attitudes of the Association of American Medical Colleges (AAMC) toward physician supply appear in flux as well. Dr. Robert Petersdorf, the new president of the AAMC, declared in his maiden address to the association's annual meeting in 1986, "It is an accepted fact that we are training too many physicians and that far too many of those we train go into the medical and surgical subspecialites, rather than primary care." In actions reflecting Pe-

TABLE III. COMPARISON OF CURRENT AND PROJECTED SUPPLY OF MDs BY SPECIALTY

	AMA	*AMA*		*BHPr*		*GMENAC*	
	Current supply	*Projected supply*		*Projected supply*		*Projected supply (2)*	
	1985	*1990*	*2000*	*1990*	*2000*	*1990*	*1990*
Total physicians (4)	511,090	574,100	683,000	559,230	655,770	535,750	593,250
Primary care (including subspecs.)	220,036	260,100	326,600	261,680	315,490	258,250	288,250
Primary care with ob-gyn	250,903	295,400	368,700	298,900	360,000	292,700	326,750
General family practice	67,051	72,600	81,800	77,680	89,130	64,400	69,350
Osteopathic general practice						23,850	25,350
Internal medicine (total) (3)	116,146	142,500	186,300	137,490	167,895	128,850	147,350
General internal medicine						73,800	87,300
Allergy and immunology	1,505			1,650	1,630	3,050	3,150
Cardiology	13,224			14,460	17,930	14,900	16,150
Endocrinology						3,850	4,200
Gastroenterology	5,917			7,170	9,850	6,900	7,550
Hematology-oncology						8,300	9,150
Infectious diseases						3,250	3,550
Nephrology						4,850	5,300
Pulmonary diseases	5,083			6,250	8,345	6,950	7,650
Rheumatology						3,000	3,350
Pediatrics (total)	36,839	45,000	58,700	46,500	58,480	41,350	46,650
General pediatrics						37,750	42,350
Pediatric allergy	409			400	320	900	1,200
Pediatric cardiology	813			1,080	1,390	1,000	1,250
Pediatric endocrinology						260	250
Pediatric hematology-oncology						550	700

Pediatric nephrology						200	200
Neonatology						700	700
Obstetrics-gynecology	30,867	35,300	42,100	37,220	44,510	34,450	38,500
Nonprimary care	291,054	314,000	356,400	297,550	340,280	277,500	305,000
Surgery (total)	128,156	144,800	166,700	143,990	162,130	135,900	152,750
Colon and rectal surgery	817			770	790		
General surgery	38,169			41,330	44,140	00,000	41,000
Neurological surgery	4,019			4,200	4,550	5,100	5,550
Obstetrics-gynecology	30,867	35,300	42,100	37,220	44,510	34,450	38,500
Ophthalmology	14,881			16,520	19,060	16,300	18,000
Orthopedic surgery	17,166			18,950	21,950	20,100	22,150
Otorhinolaryngology	7,267			7,810	8,500	8,500	9,400
Plastic surgery	3,951			4,740	5,940	3,900	4,300
Thoracic surgery	2,183			2,510	2,590	2,900	3,150
Urology	8,836			9,340	10,100	9,350	10,400
Nonprimary care							
Anesthesiology	22,021	25,700	30,300	21,880	24,390	19,450	20,800
Dermatology	6,682			7,870	9,730	7,350	7,850
Emergency medicine						9,250	9,900
Neurology	7,776			9,330	11,870	8,650	9,250
Pathology	15,767	17,800	19,700	18,460	20,780	16,850	18,450
Physical medicine & rehab.	3,258			2,840	2,990	2,400	2,500
Preventive medicine	6,307			5,980	5,250	5,550	5,550
Psychiatry	36,038	40,000	44,700	39,200	43,520	34,600	37,050
Radiology	25,268	28,600	32,600	28,080	32,320	27,800	30,250
Other/unspecified (4)	39,881	57,300	62,400	19,920	27,300	9,700	10,650

tersdorf's stated concerns, the AAMC devoted its 1987 annual meeting to the future supply of physicians and created a task force to study the question. Dean Daniel C. Tosteson of the Harvard Medical School is chairman of this task force.

I believe that what Petersdorf is learning as he wades into the mire of professional association politics that it is one thing for an individual to declare his belief that too many physicians are being produced and quite another thing for the AAMC to embrace such a view. The association, after all, is governed by a consensus of its disparate constituencies of medical school deans, teaching hospital chieftains, and clinical department chairmen. And there is hardly a consensus view today among these factions that they are educating too many physicians.

One of the more interesting developments in the continuing saga of physician supply is the increasing popularity of anesthesiology as a medical specialty attracting more students. As Table IV documents, the number of medical students opting for residencies in anesthesiology has doubled during recent years, a trend that shows no signs of abating. Indeed, the AAMC's senior medical student questionnaire in 1986 reported that more students rated anesthesiology than internal medicine as their first choice of a residency position. At the same time, the number of students taking residency training in the medical subspecialty of infectious disease is substantially less than the GMENAC Report recommended. And these estimates do not include the additional burden placed on the system by AIDS.

Many questions about the future physician supply are unanswered. These questions affect professionals interested in infectious diseases no less than other diseases. For example, what will the increasing entry of women into medicine mean for the adequacy of overall supply? Most studies indicate that women physicians are only about 70% as productive as their male counterparts because they take time to raise families and tend to spend more time with their patients.

Other difficult questions to ponder include calculating the impact of young physicians who want to live more normal lives by working fewer and more regular hours than their professional forebears and an increasing number of physicians taking early retirement. There is no agreed upon metholology to measure what is an adequate supply of physicians, so these questions will remain unanswered for the foreseeable future.

In conclusion, I would assert that reducing the size of medical school classes will be difficult despite the increasing concern of practicing physicians that too many physicians are being trained. Why it will be difficult is

multiple, but high on the list are society's commitment to educational opportunity and strong belief in the medical model. States, which invest heavily in medical education, remain committed to train physicians within their jurisdictions because, among a variety of reasons, it is a prestigious function.

Another factor also weighs in and that is the position of Ellwood, Jr., who sold the HMO concept to the Nixon Administration. They believe that a bountiful supply of physicians is a healthy development because it increases the likelihood that new physicians will practice in alternative delivery systems previously shunned by their older counterparts.

Finally, individuals of a liberal political persuasion also support a bountiful supply of physicians. For example, Ruth Hanft, an independent consultant who formerly worked as a deputy assistant secretary of the Department of Health and Human Services under President Carter, recently wrote (*Health Affairs*, Summer 1987): "With due respect to my friend Robert Petersdorf of the Association of American Medical Colleges and to the American Medical Association, I find their positions [on physician supply] parochial and not in the national interest.... I want to see all of the poor and disadvantaged receive needed services in a humane and dignified manner. I want to see reforms in the financing and delivery of care continue, in the hope that we can redirect resources to meet unmet needs. These changes will only continue if there are a sufficient number of physicians willing to—or who must if they wish to work as physicians—enter innovative care systems of institutions that serve the disadvantaged." This view follows the current thinking of congressional Democrats, who control the legislative agenda when it comes to issues surrounding physician supply, such as Representative Henry A. Waxman and Senator Edward M. Kennedy.

In the end, it may be young people who finally determine how large medical school classes are in the 1990s and beyond. Applications to medical school increased steadily during the 1960s and early 1970s, peaking at 42,624 in 1974. A period of constant decreases has followed ever since, suggesting that the practice of medicine has lost some of its earlier allure. From 1978 to 1987 applicants to medical schools declined from 36,636 to 28,123, 23%. The decreasing number of applicants, accompanied by a fairly stable first-year entering class size, has affected the applicant-to-acceptance ratio. This ratio declined from about 2.2 in 1978 to 1.8 in 1987, prompting concerns regarding the qualifications of the applicant pool.

The consequences of this phenomenon, plus many other considerations, the major ones which I cited above, will ultimately determine the number of practicing physicians in the United States in the 21st Century. While calculating the number of physicians that we will need is not a precise or well-planned decision process, it reflects very well the pluralism which dominates so many dimensions of American life.

TABLE IV. COMPARISON OF ACTUAL NUMBER OF ENTRANTS INTO RESIDENCY TRAINING WITH ENTRY RATES RECOMMENDED BY GMENAC

	1979/80 R-1 entrants (1)	*Current estimate (2) 1985/86 R-1 entrants*	*% change from 1979/80*	*Recommended by GMENAC 1986/87 R-1 entrants*	*% change from 1979/80*
Total physicians	26,433	30,091	13.8	25,147	−1.9
Osteopathic residents	1,470	2,243	52.6	1,399	−5.0
Primary care	10,850	12,550	15.7	10,850	0.0
Primary care with ob-gyn	12,094	13,846	14.5	11,845	−2.1
Family practice	2,347	2,692	14.7	2,347	0.0
Gen. pediat. & subspecs. (3)	2,122	2,425	14.3	2,122	0.0
General internal medicine	6,381	7,433	16.5	6,381	0.0
Obstetrics-gynecology	1,244	1,296	4.2	995	−20.0
Nonprimary care	14,113	15,298	8.4	12,898	−8.6
Internal medicine subspecs.	2,817	2,982	5.9	2,447	−10.1
Allergy and immunology	56	86	53.6	45	−20.0
Cardiology	701	800	14.1	561	−20.0
Endocrinology	181	188	3.9	145	−20.0
Gastroenterology	367	406	10.6	367	0.0

Hematology-oncology	472	445	−5.7	496	5.0
Infectious disease	202	216	6.9	162	−20.0
Nephrology	266	269	1.1	213	−20.0
Pulmonary disease	387	390	0.8	310	−20.0
Rheumatology	185	182	−1.6	148	−20.0
Nonprimary care					
Surgery	6,299	6,604	4.8	5,112	−18.8
Anesthesiology	675	1,087	61.0	743	10.0
Dermatology	282	261	−7.5	282	0.0
Emergency medicine	225		N.A.	N.A.	400
N.A.					
Neurology	437	499	14.2	437	0.0
Nuclear medicine	118	130	10.2	118	0.0
Pathology (5)	735	704	−4.2	698	−5.0
Physical medicine & rehab.	159	244	53.5	190	20.0
Preventive medicine (6)	163	228	39.9	196	20.0
Psychiatry	1,010	1,250	23.8	1,212	20.0
Child psychiatry	271	302	11.4	325	20.0
Radiology (7)	922	1,007	9.2	738	−20.0